

IN THE CLAIMS

1. (Currently Amended) A metal vapor discharge lamp having an arc tube, wherein the arc tube includes a container made of translucent ceramic, the container being divided into a main tube portion and two narrow tube portions respectively extending out from both ends of the main tube portion,

a discharge space is formed in the main tube portion with a light emission metal being enclosed in the discharge space,

an electrode is deposited in each narrow tube portion, a coil being wound around the electrode at an end thereof facing the discharge space,

an electrode supporting member is inserted in each narrow tube portion and connected to the other end of the electrode,

the arc tube is sealed by a sealing material that is inserted into each space between each electrode supporting member and each narrow tube portion, with an end of each narrow tube portion located on the outside side, and another end of each narrow tube portion located on the main tube portion side, such that a gap is formed between each narrow tube portion and each electrode, and

a length of each electrode is in a range of $(0.041P + 0.5)$ mm to $(0.041P + 8.0)$ mm inclusive, wherein "P" represents a lamp power in W, and the lamp power is 70 W to 400 W inclusive.

2. (Original) The metal vapor discharge lamp of Claim 1, wherein a length of a portion of each electrode projecting from each narrow tube portion into the discharge space is in a range of 3.0 mm to 6.5 mm inclusive.

3. (Original) The metal vapor discharge lamp of Claim 1, wherein each electrode has heat conductivity of no smaller than $130 \text{ W/m}^{\circ}\text{K}$, and each electrode supporting member has heat conductivity of no larger than $100 \text{ W/m}^{\circ}\text{K}$.
4. (Original) The metal vapor discharge lamp of Claim 1, wherein each electrode contains tungsten and/or molybdenum, and each electrode supporting member contains cermet.
5. (Original) The metal vapor discharge lamp of Claim 1, wherein a length of each narrow tube portion is in a range of $(0.032P + 3.5) \text{ mm}$ to $(0.032P + 8.0) \text{ mm}$ inclusive, wherein "P" represents a lamp power in W.
6. (Original) The metal vapor discharge lamp of Claim 1, wherein the sealing material is inserted into each narrow tube portion from an outer end not facing the discharge space, and a length of the sealing material in each narrow tube portion is in a range of 3.7 mm to 5.5 mm inclusive.
7. (Original) The metal vapor discharge lamp of Claim 1, wherein the main tube portion and the narrow tube portions are formed in one piece.
8. (Cancelled)

9. (Currently Amended) A metal vapor discharge lamp having an arc tube, wherein the arc tube includes a container made of translucent ceramic, the container being divided into a main tube portion and two narrow tube portions respectively extending out from both ends of the main tube portion,

a discharge space is formed in the main tube portion with a light emission metal being enclosed in the discharge space,

an electrode is deposited in each narrow tube portion, a coil being wound around the electrode at an end thereof facing the discharge space,

an electrode supporting member is inserted in each narrow tube portion and connected to the other end of the electrode,

the arc tube is sealed by a sealing material that is inserted into each space between each electrode supporting member and each narrow tube portion, and

a length of each narrow tube portion is in a range of $(0.032P + 3.5)$ mm to $(0.032P + 8.0)$ mm inclusive, wherein "P" represents a lamp power in W, and the lamp power is in a range of 70 W to 360 W inclusive.

10. (Currently Amended) A metal vapor discharge lamp having an arc tube, wherein the arc tube includes a container made of translucent ceramic, the container being divided into a main tube portion and two narrow tube portions respectively extending out from both ends of the main tube portion,

a discharge space is formed in the main tube portion with a light emission metal being enclosed in the discharge space,

an electrode is deposited in each narrow tube portion, a coil being wound around the electrode at an end thereof facing the discharge space,

an electrode supporting member is inserted in each narrow tube portion and connected to the other end of the electrode,

the arc tube is sealed by a sealing material that is inserted into each space between each electrode supporting member and each narrow tube portion, and

a length of each narrow tube portion is in a range of $(0.032P + 3.5)$ mm to $(0.032P + 6.0)$ mm inclusive, wherein "P" represents a lamp power in W, and the lamp power is in a range of 70 W to 360 W inclusive.

11. (Original) The metal vapor discharge lamp of Claim 10, wherein the light emission metal enclosed in the main tube portion contains cerium.
12. (Original) The metal vapor discharge lamp of Claim 9, wherein the sealing material is inserted into each narrow tube portion from an outer end not facing the discharge space, and a length of the sealing material in each narrow tube portion is in a range of 3.7 mm to 5.5 mm inclusive.
13. (Original) The metal vapor discharge lamp of Claim 9, wherein a thickness of each narrow tube portion is no smaller than 1.15 times a thickness of the main tube portion.
14. (Original) The metal vapor discharge lamp of Claim 9, wherein

each electrode supporting member is made of cermet.

15. (Original) The metal vapor discharge lamp of Claim 9, wherein the main tube portion and the narrow tube portions are formed in one piece.

16. (Cancelled)

17. (Currently Amended) A lighting apparatus that includes a main body, a metal vapor discharge lamp disposed in the main body, and a lighting circuit apparatus connected to the metal vapor discharge lamp, the metal vapor discharge lamp having an arc tube, wherein the arc tube includes a container made of translucent ceramic, the container being divided into a main tube portion and two narrow tube portions respectively extending out from both ends of the main tube portion,

a discharge space is formed in the main tube portion with a light emission metal being enclosed in the discharge space,

an electrode is deposited in each narrow tube portion, a coil being wound around the electrode at an end thereof facing the discharge space,

an electrode supporting member is inserted in each narrow tube portion and connected to the other end of the electrode,

the arc tube is sealed by a sealing material that is inserted into each space between each electrode supporting member and each narrow tube portion with an end of each narrow tube portion located on the outside side, and another end of each narrow tube portion located on the

main tube portion side, such that a gap is formed between each narrow tube portion and each electrode, and

a length of each electrode is in a range of $(0.041P + 0.5)$ mm to $(0.041P + 8.0)$ mm inclusive, wherein "P" represents a lamp power in W, and the lamp power is in a range of 70 W to 360 W inclusive.

18. (Currently Amended) A lighting apparatus that includes a main body, a metal vapor discharge lamp disposed in the main body, and a lighting circuit apparatus connected to the metal vapor discharge lamp, the metal vapor discharge lamp having an arc tube, wherein the arc tube includes a container made of translucent ceramic, the container being divided into a main tube portion and two narrow tube portions respectively extending out from both ends of the main tube portion,

a discharge space is formed in the main tube portion with a light emission metal being enclosed in the discharge space,

an electrode is deposited in each narrow tube portion, a coil being wound around the electrode at an end thereof facing the discharge space,

an electrode supporting member is inserted in each narrow tube portion and connected to the other end of the electrode,

the arc tube is sealed by a sealing material that is inserted into each space between each electrode supporting member and each narrow tube portion, and

a length of each narrow tube portion is in a range of $(0.032P + 3.5)$ mm to $(0.032P + 8.0)$ mm inclusive, wherein "P" represents a lamp power in W, and the lamp power is in a range of 70 W to 360 W inclusive.

19. (New) A metal vapor discharge lamp having an arc tube of a translucent ceramic including a main tube portion and two integral narrow tube portions with longitudinal openings, one narrow tube portion extends respectively from opposite ends of the main tube portion, a hollow discharge space is provided in the main tube portion having a light emission metal, comprising;

an electrode supporting member having a coefficient of thermal expansion approximately that of the ceramic is positioned in and extends from each longitudinal opening to an exterior of each narrow tube portion;

an electrode is laser welded to each electrode supporting member and is cantilevered from the electrode supporting member to extend from the longitudinal opening into the discharge space; and

a sealing material is positioned between each electrode supporting member the corresponding narrow tube portion within the longitudinal opening to seal the discharge space while leaving a predetermined length of gap around the electrode and the narrow tube portion, the sealing material extends within the longitudinal opening from the exterior of each narrow tube portion towards the discharge space a distance between 3.7 mm and 5.5 mm, wherein

each electrode extends into the discharge space a distance between 3.00 mm and 6.5 mm;

heat conductivity of each electrode is no longer than 130 (W/m*k);

heat conductivity of each electrode supporting member is no higher than 100 (W/m*k), wherein W is watts, m is meters, and K is Kelvin,

a wall thickness of the narrow tube portion is thicker than a wall thickness of the main tube portion, and

a length of each electrode is in a range of $(0.041P + 0.5)$ mm to $(0.041P + 8.0)$ mm inclusive, wherein "P" represents a lamp power in W, and the lamp power is 70 W to 400 W.

20. (New) The metal vapor discharge lamp of Claim 19, wherein a length of each narrow tube portion is in a range of $(0.032P + 3.5)$ mm to $(0.03P + 8.0)$ mm, wherein "P" represents a lamp power in W.

21. (New) The metal vapor discharge lamp of Claim 20, wherein the light emission metal enclosed in the main tube portion contains cerium.

22. (New) The metal vapor discharge lamp of Claim 21, wherein the electrode is tungsten and helical coils of molybdenum are wrapped around the electrode.

23. (New) The metal vapor discharge lamp of Claim 21, wherein a length of each narrow tube portion is in a range of $(0.032 P + 3.5)$ mm to $(0.032P + 6.0)$ mm.

24. (New) The metal vapor discharge lamp of Claim 19, wherein a thickness of each narrow tube portion is no smaller than 1.15 times a thickness of the main tube portion.